

## ABSTRACT

A thin polarizer array and a wavelength plate array that are composed of micro regions having different optical axis directions and wavelength characteristics and have a high extinction ratio and a low insertion loss, and a polarization analyzer using them are disclosed. An array of micro periodic grooves is formed on a substrate, with the directions changed from one region to another. An alternating multilayer film formed by alternating a layer of high refractive index material such as Si or Ta<sub>2</sub>O<sub>5</sub> and a layer of low refractive index material such as SiO<sub>2</sub> is formed by bias sputtering. By selecting a condition that each layer maintains its periodic projecting/recessed shape, an array of photonic crystal polarizer is formed. By mounting this array of photonic crystal polarizer in a photodetector array, a polarization analyzer that is small, has no movable part, is composed of a small number of components, and enables high-precision measurement is constituted.